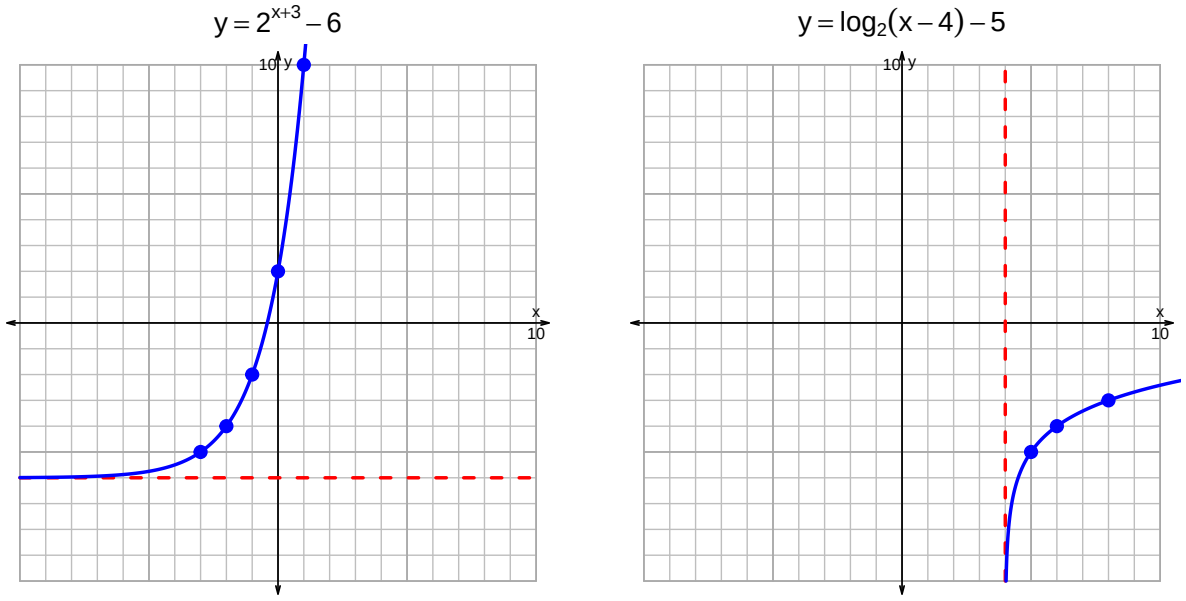
Name: Date:

S18QUIZ: EXP LOG (SLTN v288)

1. Graph $y = 2^{x+3} - 6$ and $y = \log_2(x-4) - 5$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-29 = \left(\frac{-3}{7}\right) \cdot 10^{-5t/4}$$

Divide both sides by $\frac{-3}{7}$.

$$\frac{29 \cdot 7}{3} = 10^{-5t/4}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{29 \cdot 7}{3}\right) = \frac{-5t}{4}$$

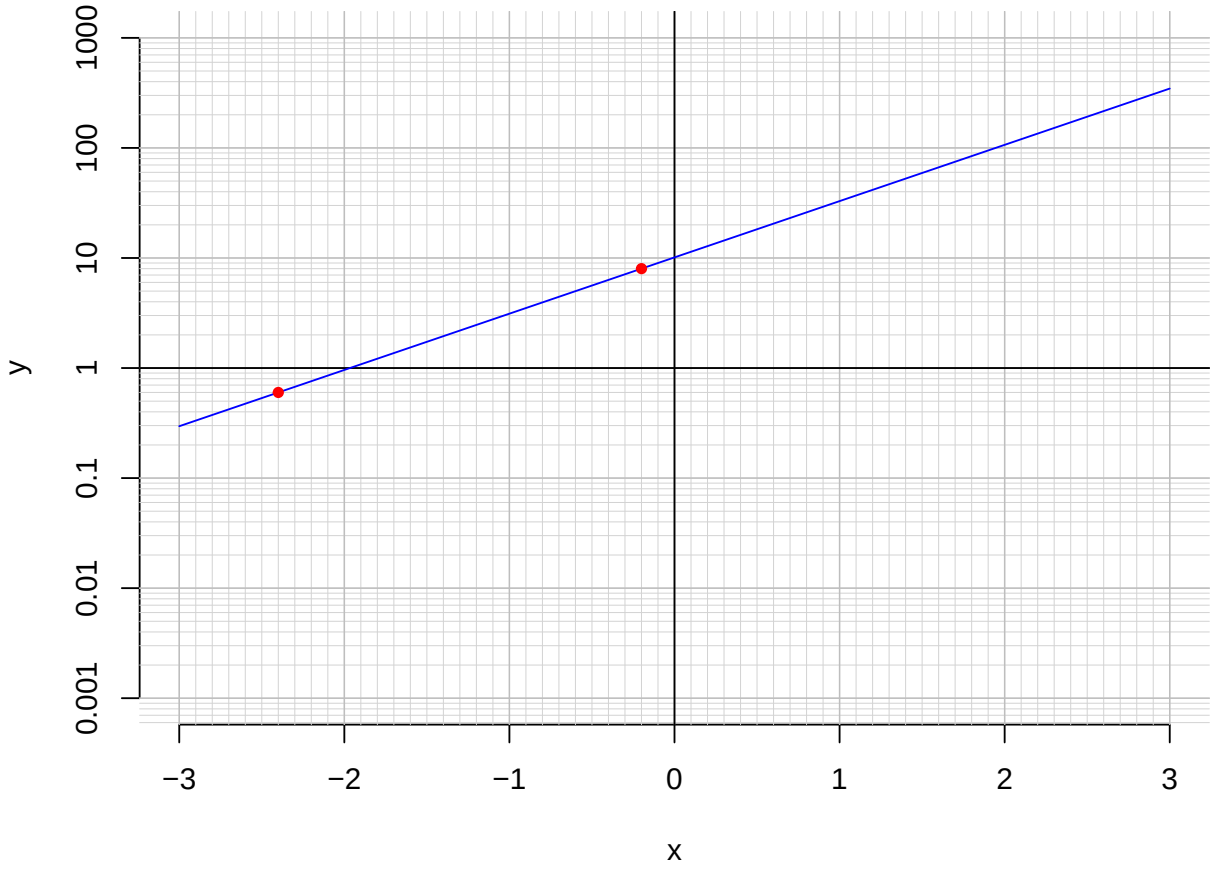
Divide both sides by $\frac{-5}{4}$.

$$\frac{-4}{5} \cdot \log_{10}\left(\frac{29 \cdot 7}{3}\right) = t$$

Switch sides.

$$t = \frac{-4}{5} \cdot \log_{10}\left(\frac{29 \cdot 7}{3}\right)$$

3. An exponential function $f(x) = 10.1 \cdot e^{1.18x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(-2.4)$.

$$f(-2.4) = 0.6$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{1}{1.18} \cdot \ln\left(\frac{x}{10.1}\right)$$

c. Using the plot above, evaluate $f^{-1}(8)$.

$$f^{-1}(8) = -0.2$$